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Fine structure of the Isoscalar Giant Monopole Resonance for ^{24}Mg , ^{58}Ni and ^{90}Zr using 200 MeV α -particle inelastic scattering at zero-degrees

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In the last decade, through high energy-resolution proton inelastic-scattering experiments, it was revealed that giant resonances carry fine structure as a signature of damping mechanisms. Now, for the first time, such high energy-resolution measurements can be made with intermediate energy α -particle inelastic-scattering at zero-degrees, where preferentially the Isoscalar Giant Monopole Resonance (ISGMR) is excited. These experiments have been performed using the Separated Sector Cyclotron (SSC) at the iThemba LABS and the K600 magnetic spectrometer for a range of nuclei including ^{24}Mg , ^{58}Ni and ^{90}Zr . In order to isolate the electric monopole response, background from other multipoles can be subtracted including the Isovector Giant Dipole Resonance (IVGDR) and the Isoscalar Giant Quadrupole Resonance (ISGQR) using energy spectra also at zero-degrees obtained from proton inelastic-scattering. Following this multipole decomposition analysis, $J\pi = 0^+$ level densities can also be extracted. Preliminary results will be presented.

Apply to be considered for a student award (Yes / No)?

Yes

Level for award (Hons, MSc, PhD, N/A)?

MSc

Main supervisor (name and email) and his / her institution

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Would you like to submit a short paper for the Conference Proceedings (Yes / No)?

Yes

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